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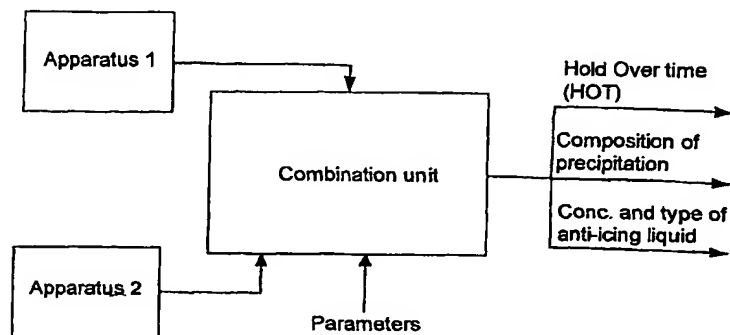
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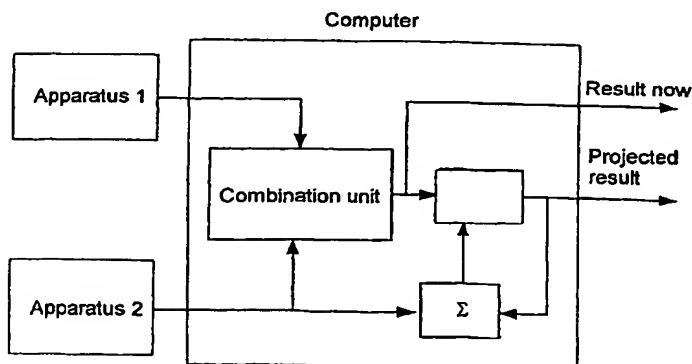
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[Continued on next page]

(54) Title: A METHOD OF DETERMINING THE RISK OF ICE DEPOSITION DUE TO PRECIPITATION AND APPARATUS FOR EXERCISING THE METHOD



(57) Abstract: The invention relates to a method and an apparatus for determining the risk of ice deposition due to precipitation. According to the invention the measurements of precipitation known so far are combined with measurements of the actual amount of ice deposited from the precipitation. Said measurements are combined in a combination unit that is able to receive further parameter information, eg the amount and type of anti-icing liquid. Compared to previously a considerably more reliable determination of the risk of ice deposition is accomplished, eg on the wing of an aeroplane applied with anti-icing liquid, and so is reliable determination of the holdover time, HOT, during which one can be sure that the aeroplane is free from ice in the current weather conditions.



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SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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# INTERNATIONAL SEARCH REPORT

International Application No  
PC 03/00556

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 7 B64D15/20 G01W1/14

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 B64D G01W G08B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EP0-Internal

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4 613 938 A (SHUBERT WILLIAM K ET AL) 23 September 1986 (1986-09-23) abstract	1-24
A	US 5 641 972 A (BRED A JEAN-MARC) 24 June 1997 (1997-06-24) abstract	1-24
A	US 6 091 335 A (CHOISNET JOEL ET AL) 18 July 2000 (2000-07-18) abstract	1-24
A	WO 00 54078 A (NIELSEN EVAN) 14 September 2000 (2000-09-14) cited in the application abstract	1-24

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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# INTERNATIONAL SEARCH REPORT

Information on patent family members

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Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 4613938	A	23-09-1986	CA 1229240 A1	17-11-1987
			DE 3590723 C2	26-03-1992
			DE 3590723 T	19-02-1987
			EP 0209521 A1	28-01-1987
			JP 62502059 T	13-08-1987
			WO 8604435 A1	31-07-1986
-----				
US 5641972	A	24-06-1997	FR 2714971 A1	13-07-1995
			CA 2140102 A1	14-07-1995
			DE 69529183 D1	30-01-2003
			DE 69529183 T2	21-08-2003
			EP 0663592 A1	19-07-1995
-----				
US 6091335	A	18-07-2000	FR 2768122 A1	12-03-1999
			CA 2246829 A1	09-03-1999
			GB 2329016 A ,B	10-03-1999
-----				
WO 0054078	A	14-09-2000	DK 32399 A	09-09-2000
			AT 240537 T	15-05-2003
			AU 3147000 A	28-09-2000
			CA 2365712 A1	14-09-2000
			CN 1343313 T	03-04-2002
			DE 60002717 D1	18-06-2003
			WO 0054078 A1	14-09-2000
			DK 1185889 T3	15-09-2003
			EP 1185889 A1	13-03-2002
			JP 2002539435 T	19-11-2002
			NO 20014348 A	24-10-2001
			PL 351164 A1	24-03-2003
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